

KINDLY AMEND THIS APPLICATION AS FOLLOWS:

In the Claims:

~~Cancel claims 204-224 and 227-277.~~

Add new claims 278-453 as follows:

-- 278. (NEW) A nucleotide having the formula

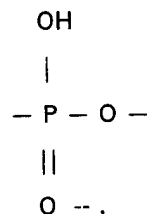
Sig – PM – SM – BASE

wherein PM is selected from the group consisting of a di-phosphate and a tri-phosphate moiety, SM is a sugar moiety and BASE is a moiety selected from the group consisting of a pyrimidine, a purine and a deazapurine, or analog thereof, said PM being attached to SM, said BASE being attached to SM, and Sig being covalently attached to PM directly or via a chemical linkage, said Sig being a moiety capable of non-radioactive detection when attached to PM, wherein said nucleotide is capable of being incorporated into an oligo- or polynucleotide. --

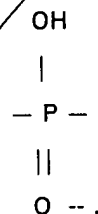
-- 279. (NEW) The nucleotide of claim 278, wherein said Sig is or renders the nucleotide self-signaling or self-indicating or self-detecting. --

-- 280. (NEW) The nucleotide of claim 278, wherein said Sig moiety comprises at least three carbon atoms. --

-- 281. (NEW) The nucleotide of claim 278, wherein said covalent attachment comprises



-- 282. (NEW) The nucleotide of claim 278, wherein said covalent attachment comprises

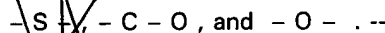
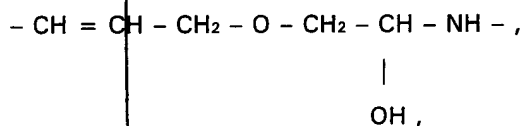
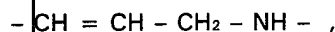
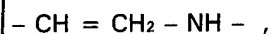


-- 283. (NEW) The nucleotide of claim 278, wherein said chemical linkage does not interfere substantially with the characteristic ability of Sig to form a detectable signal. --

-- 284. (NEW) The nucleotide of claim 278, wherein said chemical linkage comprises a member selected from the group consisting of an olefinic bond at the α -position relative to the point of attachment to the nucleotide, a $-\text{CH}_2\text{NH}-$ moiety, or both. --

-- 285. (NEW) The nucleotide of claim 278, wherein said chemical linkage comprises an allylamine group. --

-- 286. (NEW) The nucleotide of claim 278, wherein said chemical linkage comprises or includes an olefinic bond at the \bar{N} -position relative to the point of attachment to the nucleotide, or any of the moieties:



-- 287. (NEW) The nucleotide of claim 278, wherein said chemical linkage of Sig includes a glycosidic linkage moiety. --

-- 288. (NEW) The nucleotide of claim 278, wherein Sig comprises a component selected from the group consisting of biotin, iminobiotin, an electron dense component, a magnetic component, an enzyme or an enzyme component, a hormone or a hormone component, a metal-containing component, a fluorescent component, a chemiluminescent component, an antigen, a hapten and an antibody or an antibody component, or a combination of any of the foregoing. --

-- 289. (NEW) The nucleotide of claim 288, wherein said electron dense component comprises ferritin. --

-- 290. (NEW) The nucleotide of claim 278, wherein Sig is complexed with a binding protein therefor, and said binding protein is conjugated to ferritin. --

-- 291. (NEW) The nucleotide of claim 288, wherein Sig comprises a magnetic component. --

-- 292. (NEW) The nucleotide of claim 291, wherein said magnetic component comprises a magnetic oxide. --

-- 293. (NEW) The nucleotide of claim 292, wherein said magnetic oxide comprises ferric oxide. --

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-- 294. (NEW) The nucleotide of claim 288, wherein Sig comprises an enzyme or an enzyme component. --

-- 295. (NEW) The nucleotide of claim 294, wherein said enzyme is selected from the group consisting of alkaline phosphatase, acid phosphatase, β -galactosidase, ribonuclease, glucose oxidase and peroxidase. --

-- 296. (NEW) The nucleotide of claim 288, wherein Sig comprises a metal-containing component. --

-- 297. (NEW) The nucleotide of claim 296, wherein said metal-containing component is catalytic. --

-- 298. (NEW) The nucleotide of claim 288, wherein Sig comprises a fluorescent component. --

-- 299. (NEW) The nucleotide of claim 298, wherein said fluorescent component comprises a member selected from the group consisting of fluorescein, rhodamine and dansyl. --

-- 300. (NEW) The nucleotide of claim 288, wherein Sig comprises a chemiluminescent component. --

-- 301. (NEW) The nucleotide of claim 288, wherein Sig is selected from the group consisting of an antigen or hapten capable of complexing with an antibody or antibody component specific thereto, and an antibody or antibody component capable of complexing with an antigen or hapten. --

-- 302. (NEW) An oligo- or polynucleotide comprising at least one nucleotide of claim 278, and wherein the oligo- or polynucleotide is terminally ligated or attached to a polypeptide. --

-- 303. (NEW) A composition comprising an oligo- or polynucleotide including at least one nucleotide of claim 278, a polypeptide capable of forming a complex with Sig and a moiety which can be detected when such complex is formed. --

-- 304. (NEW) The composition of claim 303, wherein said polypeptide comprises a polylysine. --

-- 305. (NEW) The composition of claim 303, wherein said polypeptide is selected from the group consisting of avidin, streptavidin and anti-Sig immunoglobulin. --

--306. (NEW) The composition of claim 302, wherein Sig is a ligand and said polypeptide is an antibody thereto. --

-- 307. (NEW) The composition of claim 302, wherein said detectable moiety is selected from the group consisting of biotin, iminobiotin, an electron dense component, a magnetic component, an enzyme or an enzyme component, a hormone or a hormone component, a metal-containing component, a fluorescent component, a chemiluminescent component, an antigen, a hapten and an antibody or an antidobody component. --

-- 308. (NEW) The nucleotide of claim 278, comprising a deoxyribonucleotide. --

-- 309. (NEW) The nucleotide of claim 278, comprising a ribonucleotide. --

-- 310. (NEW) An oligo- or polynucleotide comprising at least one nucleotide having the formula

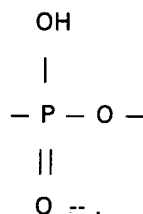
Sig – PM – SM – BASE

wherein PM is a phosphate moiety, SM is a sugar moiety and BASE is a moiety selected from the group consisting of a pyrimidine, a purine and a deazapurine, or analog thereof, said PM being attached to SM, said BASE being attached to SM, and Sig being covalently attached to PM directly or via a chemical linkage, said Sig being a moiety capable of non-radioactive detection when attached to PM or when said nucleotide is incorporated into said oligo- or polynucleotide. --

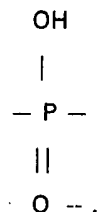
-- 311. (NEW) The oligo- or polynucleotide of claim 310, wherein said Sig is or renders the nucleotide self-signaling or self-indicating or self-detecting. --

-- 312. (NEW) The oligo- or polynucleotide of claim 310, wherein said Sig moiety comprises at least three carbon atoms. --

-- 313. (NEW) The oligo- or polynucleotide of claim 310, wherein said covalent attachment comprises



-- 314. (NEW) The oligo- or polynucleotide of claim 310, wherein said covalent attachment comprises

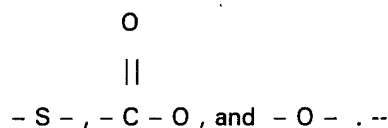
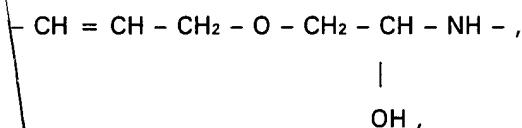
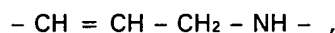


-- 315. (NEW) The oligo- or polynucleotide of claim 310, wherein said chemical linkage does not interfere substantially with the characteristic ability of Sig to form a detectable signal. --

-- 316. (NEW) The oligo- or polynucleotide of claim 310, wherein said chemical linkage comprises a member selected from the group consisting of an olefinic bond at the α -position relative to the point of attachment to the nucleotide, a $-\text{CH}_2\text{NH}-$ moiety, or both. --

-- 317. (NEW) The oligo- or polynucleotide of claim 310, wherein said chemical linkage comprises an allylamine group. --

-- 318. (NEW) The oligo- or polynucleotide of claim 310, wherein said chemical linkage comprises or includes an olefinic bond at the N-position relative to the point of attachment to the nucleotide, or any of the moieties:



-- 319. (NEW) The oligo- or polynucleotide of claim 310, wherein said chemical linkage of Sig includes a glycosidic linkage moiety. --

-- 320. (NEW) The oligo- or polynucleotide of claim 310, wherein said phosphate moiety is mono-, di or tri-phosphate and said Sig moiety is covalently attached to said phosphate moiety through a phosphorus or phosphate oxygen. --

-- 321. (NEW) The oligo- or polynucleotide of claim 310, wherein Sig comprises a component selected from the group consisting of biotin, iminobiotin, an electron dense component, a magnetic component, an enzyme or an enzyme component, a hormone or a hormone component, a metal-containing component, a fluorescent component, a chemiluminescent component, an antigen, a hapten and an antibody or an antibody component, or a combination of any of the foregoing. --

-- 322. (NEW) The oligo- or polynucleotide of claim 321, wherein said electron dense component comprises ferritin. --

-- 323. (NEW) The oligo- or polynucleotide of claim 310, wherein Sig is complexed with a binding protein therefor, and said binding protein is conjugated to ferritin. --

-- 324. (NEW) The oligo- or polynucleotide of claim 321, wherein Sig comprises a magnetic component. --

-- 325. (NEW) The oligo- or polynucleotide of claim 324, wherein said magnetic component comprises a magnetic oxide. --

-- 326. (NEW) The oligo- or polynucleotide of claim 325, wherein said magnetic oxide comprises ferric oxide. --

-- 327. (NEW) The oligo- or polynucleotide of claim 321, wherein Sig comprises an enzyme or an enzyme component. --

-- 328. (NEW) The oligo- or polynucleotide of claim 321, wherein said enzyme is selected from the group consisting of alkaline phosphatase, acid phosphatase, β -galactosidase, ribonuclease, glucose oxidase and peroxidase. --

-- 329. (NEW) The oligo- or polynucleotide of claim 321, wherein Sig comprises a metal-containing component. --

-- 330. (NEW) The oligo- or polynucleotide of claim 329, wherein said metal-containing component is catalytic. --

-- 331. (NEW) The oligo- or polynucleotide of claim 321, wherein Sig comprises a fluorescent component. --

-- 332. (NEW) The oligo- or polynucleotide of claim 331, wherein said fluorescent component comprises a member selected from the group consisting of fluorescein, rhodamine and dansyl. --

-- 333. (NEW) The oligo- or polynucleotide of claim 321, wherein Sig comprises a chemiluminescent component. --

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-- 334. (NEW) The oligo- or polynucleotide of claim 321, wherein Sig is selected from the group consisting of an antigen or hapten capable of complexing with an antibody or antibody component specific thereto, and an antibody or antibody component capable of complexing with an antigen or hapten. --

-- 335. (NEW) The oligo- or polynucleotide of claim 310, wherein said Sig moiety is attached to a terminal nucleotide in said oligo- or polynucleotide. --

-- 336. (NEW) The oligo- or polynucleotide of claim 335, wherein the sugar moiety of said terminal nucleotide has a hydrogen at the 2' position thereof. --

-- 337. (NEW) The oligo- or polynucleotide of claim 335, wherein the sugar moiety of said terminal nucleotide has a hydrogen at each of the 2' and 3' positions thereof. --

-- 338. (NEW) A composition comprising a polymeric compound having attached directly or indirectly thereto at least one nucleotide having the formula:

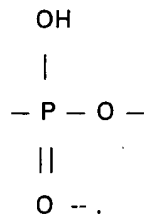
Sig – PM – SM – BASE

wherein PM is a phosphate moiety, SM is a sugar moiety and BASE is a moiety selected from the group consisting of a pyrimidine, a purine and a deazapurine, or analog thereof, said PM being attached to SM, said BASE being attached to SM, and Sig being covalently attached to PM directly or via a chemical linkage, said Sig being a moiety capable of non-radioactive detection when attached to PM and when said nucleotide is incorporated into said composition. --

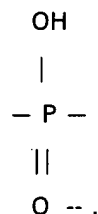
-- 339. (NEW) The composition of claim 338, wherein said Sig is or renders the composition self-signaling or self-indicating or self-detecting. --

-- 340. (NEW) The composition of claim 338, wherein said Sig moiety comprises at least three carbon atoms. --

-- 341. (NEW) The composition of claim 338, wherein said covalent attachment comprises



-- 342. (NEW) The composition of claim 338, wherein said covalent attachment comprises

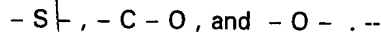
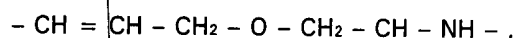
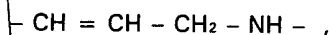


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-- 343. (NEW) The composition of claim 338, wherein said chemical linkage does not interfere substantially with the characteristic ability of Sig to form a detectable signal. --

-- 344. (NEW) The composition of claim 338, wherein said chemical linkage comprises a member selected from the group consisting of an olefinic bond at the α -position relative to the point of attachment to the nucleotide, a $-\text{CH}_2\text{NH}-$ moiety, or both. --

-- 345. (NEW) The composition of claim 338, wherein said chemical linkage comprises an allylamine group. --

-- 346. (NEW) The composition of claim 338, wherein said chemical linkage comprises or includes an olefinic bond at the \bar{N} -position relative to the point of attachment to the nucleotide, or any of the moieties:



-- 347. (NEW) The composition of claim 338, wherein said chemical linkage of Sig includes a glycosidic linkage moiety. --

-- 348. (NEW) The composition of claim 338, wherein said phosphate moiety is mono-, di or tri-phosphate and said Sig moiety is covalently attached to said phosphate moiety through a phosphorus or phosphate oxygen. --

-- 349. (NEW) The composition of claim 338, wherein Sig comprises a component selected from the group consisting of biotin, iminobiotin, an electron dense component, a magnetic component, an enzyme or an enzyme component, a hormone or a hormone component, a metal-containing component, a fluorescent component, a chemiluminescent component, an antigen, a hapten and an antibody or an antibody component, or a combination of any of the foregoing. --

-- 350. (NEW) The composition of claim 349, wherein said electron dense component comprises ferritin. --

-- 351. (NEW) The composition of claim 338, wherein Sig is complexed with a binding protein therefor, and said binding protein is conjugated to ferritin. --

-- 352. (NEW) The composition of claim 349, wherein Sig comprises a magnetic component. --

6 -- 353. (NEW) The composition of claim 352, wherein said magnetic component comprises a magnetic oxide. --

-- 354. (NEW) The composition of claim 353, wherein said magnetic oxide comprises ferric oxide. --

-- 355. (NEW) The composition of claim 349, wherein Sig comprises an enzyme or an enzyme component. --

-- 356. (NEW) The composition of claim 355, wherein said enzyme is selected from the group consisting of alkaline phosphatase, acid phosphatase, β -galactosidase, ribonuclease, glucose oxidase and peroxidase. --

-- 357. (NEW) The composition of claim 349, wherein Sig comprises a metal-containing component. --

-- 358. (NEW) The composition of claim 349, wherein said metal-containing component is catalytic. --

-- 359. (NEW) The composition of claim 349, wherein Sig comprises a fluorescent component. --

-- 360. (NEW) The composition of claim 359, wherein said fluorescent component comprises a member selected from the group consisting of fluorescein, rhodamine and dansyl. --

-- 361. (NEW) The composition of claim 349, wherein Sig comprises a chemiluminescent component. --

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-- 362. (NEW) The composition of claim 349, wherein Sig is selected from the group consisting of an antigen or hapten capable of complexing with an antibody or antibody component specific thereto, and an antibody or antibody component capable of complexing with an antigen or hapten. --

-- 363. (NEW) The composition of claim 338, and a polypeptide capable of forming a complex with Sig. --

-- 364. (NEW) The composition of claim 363, further comprising a detectable moiety which can be detected when such complex is formed. --

-- 365. (NEW) The composition of claim 363, wherein said polypeptide comprises a polylysine. --

-- 366. (NEW) The composition of claim 363, wherein said polypeptide comprises at least one member selected from the group consisting of avidin, streptavidin and anti-Sig immunoglobulin. --

-- 367. (NEW) The composition of claim 363, wherein Sig comprises a ligand and said polypeptide comprises an antibody thereto. --

-- 368. (NEW) The composition of claims 338 or 364, wherein said detectable moiety comprises a member selected from the group consisting of biotin, iminobiotin, an electron dense component, a magnetic component, an enzyme or an enzyme component, a hormone or a hormone component, a metal-containing component, a fluorescent component, a chemiluminescent component, an antigen, a hapten and an antibody or an antibody component, or a combination of any of the foregoing. --

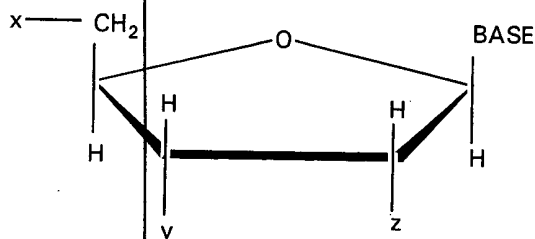
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-- 369. (NEW) The composition of claim 338, wherein said polymeric compound is selected from the group consisting of an oligo- or polynucleotide, an oligo- or polypeptide, and an oligo- or polysaccharide. --

-- 370. (NEW) The composition of claim 369, wherein said polymeric compound comprises an oligo- or polynucleotide. --

-- 371. (NEW) The composition of claim 370, wherein said oligo- or polynucleotide comprises an oligo- or polydeoxyribonucleotide. --

-- 372. (NEW) The composition of claim 370, wherein said oligo- or polynucleotide comprises an oligo- or polyribonucleotide. --

-- 373. (NEW) A nucleotide having the structural formula:



wherein BASE is a moiety selected from the group consisting of a pyrimidine, a purine, and a deazapurine, or analog thereof, and wherein BASE is attached to the 1' position of the pentose ring from the N1 position when BASE is a pyrimidine or from the N9 position when BASE is a purine or a deazapurine;

wherein x is selected from the group consisting of H-, HO-, a di-phosphate and a tri-phosphate;

wherein y is selected from the group consisting of H-, HO-, a di-phosphate and a tri-phosphate;

wherein z is selected from the group consisting of H- and HO-; and

wherein Sig is covalently attached to x, y or z directly or through a chemical linkage, said Sig being a moiety capable of non-radioactive detection when so attached to x, y or z; and

wherein said nucleotide is capable of being incorporated into an oligo- or polynucleotide. --

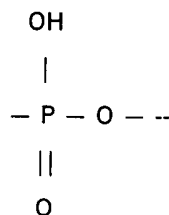
-- 374. (NEW) The nucleotide of claim 373, wherein said Sig is or renders the nucleotide self-signaling or self-indicating or self-detecting. --

-- 375. (NEW) The nucleotide of claim 373, wherein said chemical linkage does not interfere substantially with the characteristic ability of Sig to form a detectable signal. --

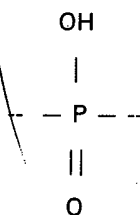
-- 376. (NEW) The nucleotide of claim 373, wherein said Sig moiety comprises at least three carbon atoms. --

Enz-5(D6)(C2)

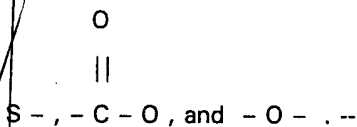
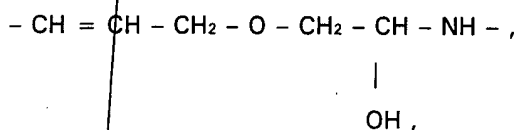
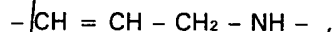
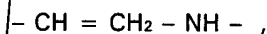
-- 377. (NEW) The nucleotide of claim 373, wherein said covalent attachment comprises:



-- 378. (NEW) The nucleotide of claim 372, wherein said covalent attachment comprises:



-- 379. (NEW) The nucleotide of claim 372, wherein said chemical linkage comprises or includes an olefinic bond at the \tilde{N} -position relative to x, y or z, or any of the moieties:



-- 380. (NEW) The nucleotide of claim 372, wherein said chemical linkage of Sig includes a glycosidic linkage moiety. --

-- 381. (NEW) The nucleotide of claim 372, wherein Sig comprises a component selected from the group consisting of biotin, iminobiotin, an electron dense component, a magnetic component, an enzyme or an enzyme component, a hormone or a hormone component, a metal-containing component, a fluorescent component, a chemiluminescent component, an antigen, a hapten and an antibody or an antibody component, or a combination of any of the foregoing. --


-- 382. (NEW) The nucleotide of claim 381, wherein said electron dense component comprises ferritin. --

-- 383. (NEW) The nucleotide of claim 372, wherein Sig is complexed with a binding protein therefor, and said binding protein is conjugated to ferritin. --

-- 384. (NEW) The nucleotide of claim 381, wherein Sig comprises a magnetic component. --

-- 385. (NEW) The nucleotide of claim 384, wherein said magnetic component comprises a magnetic oxide. --

-- 386. (NEW) The nucleotide of claim 385, wherein said magnetic oxide comprises ferric oxide. --

 -- 387. (NEW) The nucleotide of claim 381, wherein Sig comprises an enzyme or an enzyme component. --

-- 388. (NEW) The nucleotide of claim 387, wherein said enzyme is selected from the group consisting of alkaline phosphatase, acid phosphatase, β -galactosidase, ribonuclease, glucose oxidase and peroxidase. --

-- 389. (NEW) The nucleotide of claim 381, wherein Sig comprises a metal-containing component. --

-- 390. (NEW) The nucleotide of claim 389, wherein said metal-containing component is catalytic. --

-- 391. (NEW) The nucleotide of claim 381, wherein Sig comprises a fluorescent component. --

-- 392. (NEW) The nucleotide of claim 391, wherein said fluorescent component comprises a member selected from the group consisting of fluorescein, rhodamine and dansyl. --

-- 393. (NEW) The nucleotide of claim 381, wherein Sig comprises a chemiluminescent component. --

-- 394. (NEW) The nucleotide of claim 381, wherein Sig comprises a hapten component capable of completing with an antibody specific thereto. --

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-- 395. (NEW) An oligo- or polynucleotide comprising at least one nucleotide of claim 372, and wherein the oligo- or polynucleotide is terminally ligated or attached to a polypeptide. --

-- 396. (NEW) A composition comprising an oligo- or polynucleotide including at least one nucleotide of claim 372, a polypeptide capable of forming a complex with Sig and a moiety which can be detected when such complex is formed. --

-- 397. (NEW) The composition of claim 395, wherein said polypeptide comprises a polylysine. --

-- 398. (NEW) The composition of claim 395, wherein said polypeptide is selected from the group consisting of avidin, streptavidin and anti-Sig immunoglobulin. --

-- 399. (NEW) The composition of claim 396, wherein Sig is a ligand and said polypeptide is an antibody thereto. --

-- 400. (NEW) The composition of claim 396, wherein said detectable moiety is selected from the group consisting of biotin, iminobiotin, an electron dense component, a magnetic component, an enzyme or an enzyme component, a hormone or a hormone component, a metal-containing component, a fluorescent component, a chemiluminescent component, an antigen, a hapten and an antibody or an antidobody component. --

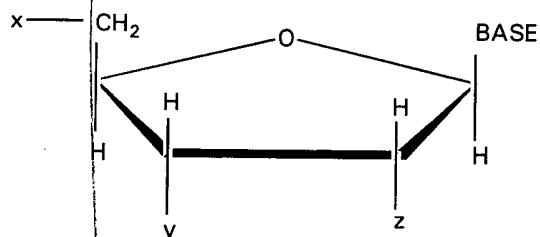
-- 401. (NEW) The nucleotide of claim 372, comprising a deoxyribonucleotide. --

-- 402. (NEW) The nucleotide of claim 372, comprising a ribonucleotide. --

-- 403. (NEW) The nucleotide of claim 372, wherein z comprises a hydrogen. --

-- 404. (NEW) The nucleotide of claim 372, wherein both y and z comprise a hydrogen. --

-- 405. (NEW) An oligo- or polynucleotide comprising at least one nucleotide having the structural formula:



wherein BASE is a moiety selected from the group consisting of a pyrimidine, a purine and a deazapurine, or analog thereof, and wherein BASE is attached to the 1' position of the pentose ring from the N1 position when BASE is a pyrimidine or from the N9 position when BASE is a purine or a deazapurine;

wherein x is selected from the group consisting of H-, HO-, a mono-phosphate, a di-phosphate and a tri-phosphate;

wherein y is selected from the group consisting of H-, HO-, a mono-phosphate, a di-phosphate and a tri-phosphate;

wherein z is selected from the group consisting of H- and HO- ; and

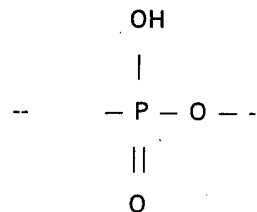
wherein Sig is covalently attached to x, y or z directly or through a chemical linkage, said Sig being a moiety capable of non-radioactive detection when so attached to x, y or z. --

oligo- or polynucleotide
 -- 406. (NEW) The ~~nucleotide~~ of claim 405, wherein said Sig is or renders the nucleotide or the oligo- or polynucleotide self-signaling or self-indicating or self-detecting. --

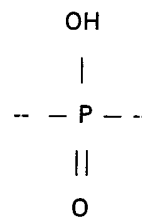
-- 407. (NEW) The oligo- or polynucleotide of claim 405, wherein said chemical linkage does not interfere substantially with the characteristic ability of Sig to form a detectable signal. --

-- 408. (NEW) The oligo- or polynucleotide of claim 405, wherein said Sig moiety comprises at least three carbon atoms. --

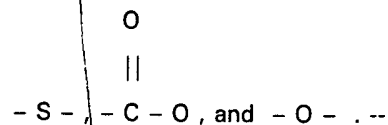
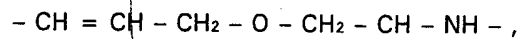
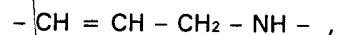
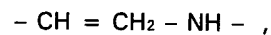
-- 409. (NEW) The oligo- or polynucleotide of claim 405, wherein said covalent attachment comprises:



-- 410. (NEW) The oligo- or polynucleotide of claim 405, wherein said covalent attachment comprises:



-- 411. (NEW) The oligo- or polynucleotide of claim 405, wherein said chemical linkage comprises or includes an olefinic bond at the \bar{N} -position relative to x, y or z, or any of the moieties:



-- 412. (NEW) The oligo- or polynucleotide of claim 405, wherein said chemical linkage of Sig includes a glycosidic linkage moiety. --

-- 413. (NEW) The oligo- or polynucleotide of claim 405, wherein Sig comprises a component selected from the group consisting of biotin, iminobiotin, an electron dense component, a magnetic component, an enzyme or an enzyme component, a hormone or a hormone component, a metal-containing component, a fluorescent component, a chemiluminescent component, an antigen, a hapten and an antibody or an antibody component, or a combination of any of the foregoing. --

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-- 414. (NEW) The oligo- or polynucleotide of claim 413, wherein said electron dense component comprises ferritin. --

-- 415. (NEW) The oligo of claim 405, wherein Sig is complexed with a binding protein therefor, and said binding protein is conjugated to ferritin. --

-- 416. (NEW) The oligo- or polynucleotide of claim 413, wherein Sig comprises a magnetic component. --

-- 417. (NEW) The oligo- or polynucleotide of claim 416, wherein said magnetic component comprises a magnetic oxide. --

-- 418. (NEW) The oligo- or polynucleotide of claim 417, wherein said magnetic oxide comprises ferric oxide. --

-- 419. (NEW) The oligo- or polynucleotide of claim 413, wherein Sig comprises an enzyme or an enzyme component. --

-- 420. (NEW) The oligo- or polynucleotide of claim 419, wherein said enzyme is selected from the group consisting of alkaline phosphatase, acid phosphatase, β -galactosidase, ribonuclease, glucose oxidase and peroxidase. --

-- 421. (NEW) The oligo- or polynucleotide of claim 413, wherein Sig comprises a metal-containing component. --

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-- 422. (NEW) The oligo- or polynucleotide of claim 421, wherein said metal-containing component is catalytic. --

-- 423. (NEW) The oligo- or polynucleotide of claim 413, wherein Sig comprises a fluorescent component. --

-- 424. (NEW) The oligo- or polynucleotide of claim 423, wherein said fluorescent component comprises a member selected from the group consisting of fluorescein, rhodamine and dansyl. --

-- 425. (NEW) The oligo- or polynucleotide of claim 413, wherein Sig comprises a chemiluminescent component. --

-- 426. (NEW) The oligo- or polynucleotide of claim 413, wherein Sig comprises a hapten component capable of completing with an antibody specific thereto. --

-- 427. (NEW) The oligo- or polynucleotide of claims 310 or 405, wherein said nucleotide comprises a deoxyribonucleotide. --

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Page 28 (Amendment Under 37 C.F.R. §1.116 - November 24, 1997)

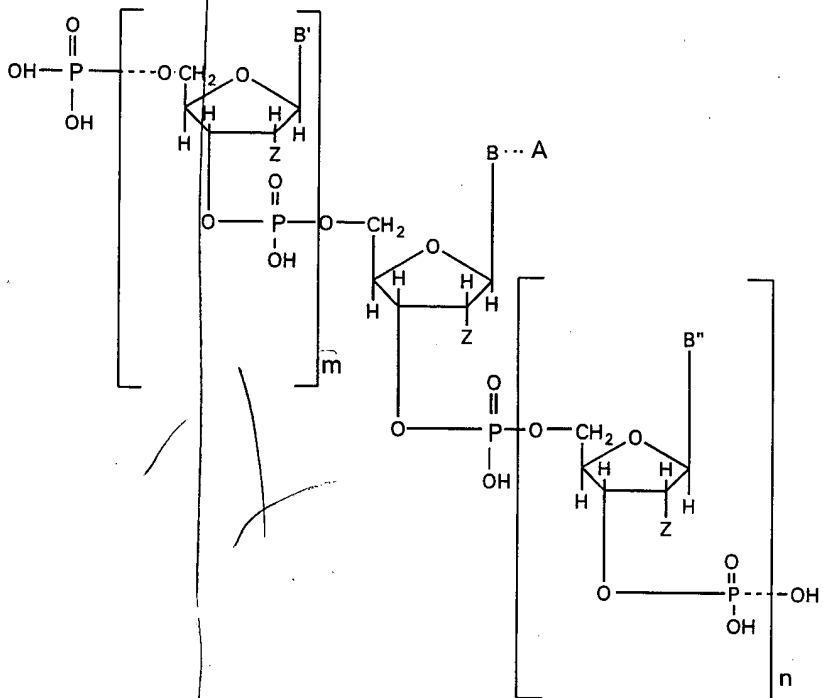
-- 428. (NEW) The oligo- or polynucleotide of claims 310 or 405, wherein said nucleotide comprises a ribonucleotide. --

-- 429. (NEW) The oligo- or polynucleotide of claim 405, wherein said nucleotide comprises a terminal nucleotide of the oligo- or polynucleotide. --

6 -- 430. (NEW) The oligo- or polynucleotide of claim 429, wherein z of said terminal nucleotide comprises a hydrogen at the 2' position thereof. --

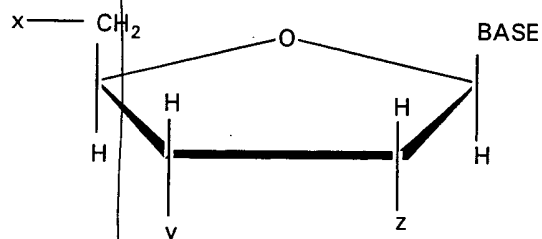
-- 431. (NEW) The oligo- or polynucleotide of claim 429, wherein both y and z of said terminal nucleotide comprise a hydrogen at the 3' and 2' positions thereof, respectively. --

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wherein said Sig moiety is attached to at least one of the phosphate moieties in said structural formula. --

-- 433. (NEW) A composition comprising a polymeric compound attached directly or indirectly to at least one nucleotide having the structural formula:



wherein BASE is selected from the group consisting of a pyrimidine, a purine and a deazapurine, or analog thereof, and wherein BASE is attached to the 1' position of the pentose ring from the N1 position when BASE is a pyrimidine or from the N9 position when BASE is a purine or a deazapurine;

wherein x comprises a member selected from the group consisting of: H- , HO- , a mono-phosphate, a di-phosphate and a tri-phosphate;

wherein y comprises a member selected from the group consisting of: H- , HO- , a mono-phosphate, a di-phosphate and a tri-phosphate;

wherein z comprises a member selected from the group consisting of H- and HO- ; and

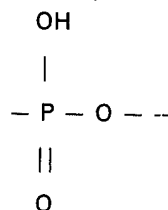
wherein Sig is covalently attached to x, y or z directly or through a chemical linkage, said Sig being a moiety capable of non-radioactive detection when so attached to x, y or z. --

-- 434. (NEW) The composition of claim 433, wherein said Sig is or renders the nucleotide or the composition self-signaling or self-indicating or self-detecting. --

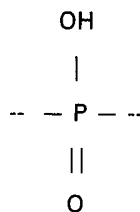
-- 435. (NEW) The composition of claim 433, wherein said chemical linkage does not interfere substantially with the characteristic ability of Sig to form a detectable signal. --

-- 436. (NEW) The composition of claim 433, wherein said Sig moiety comprises at least three carbon atoms. --

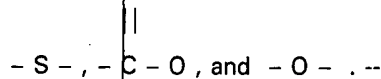
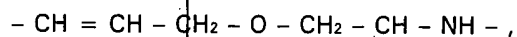
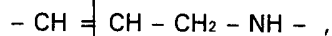
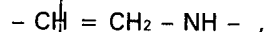
-- 437. (NEW) The composition of claim 433, wherein said covalent attachment comprises:



-- 438. (NEW) The composition of claim 433, wherein said covalent attachment comprises:



-- 439. (NEW) The composition of claim 433, wherein said chemical linkage comprises or includes an olefinic bond at the β -position relative to x, y or z, or any of the moieties:



-- 440. (NEW) The composition of claim 433, wherein said chemical linkage comprises a member selected from the group consisting of an olefinic bond at the α -position relative to the point of attachment to the nucleotide, a $-\text{CH}_2\text{NH}-$ moiety, or both. --

-- 441. (NEW) The composition of claim 433, wherein said chemical linkage comprises an allylamine group. --

-- 442. (NEW) The composition of claim 433, wherein at least one of x, y and z comprises a mono-, di- or tri-phosphate and said Sig is covalently attached to at least one thereto through a phosphate oxygen or a phosphorus. --

-- 443. (NEW) The composition of claim 443, wherein said chemical linkage of Sig includes a glycosidic linkage moiety. --

-- 444. (NEW) The composition of claim 443, and a polypeptide capable of forming a complex with Sig. --

-- 445. (NEW) The composition of claim 444, wherein said polypeptide comprises a polylysine. --

-- 446. (NEW) The composition of claim 444, wherein said polypeptide comprises at least one member selected from the group consisting of avidin, streptavidin and anti-Sig immunoglobulin. --

-- 447. (NEW) The composition of claim 444, wherein Sig comprises a ligand and said polypeptide comprises an antibody thereto. --

Enz-5(D6)(C2)

-- 448. (NEW) The composition of claim 444, further comprising a detectable moiety which can be detected when such complex is formed. --

-- 449. (NEW) The composition of claims 433 or 448, wherein said detectable moiety comprises a member selected from the group consisting of biotin, iminobiotin, an electron dense component, a magnetic component, an enzyme or an enzyme component, a hormone or a hormone component, a metal-containing component, a fluorescent component, a chemiluminescent component, an antigen, a hapten and an antibody or an antibody component, or a combination of any of the foregoing. --

-- 450. (NEW) The composition of claim 433, wherein said polymeric compound is selected from the group consisting of an oligo- or polynucleotide, an oligo- or polypeptide, and an oligo- or polysaccharide. --

-- 451. (NEW) The composition of claim 450, wherein said polymeric compound comprises an oligo- or polynucleotide. --

-- 452. (NEW) The composition of claim 451, wherein said oligo- or polynucleotide comprises an oligo- or polydeoxyribonucleotide. --

-- 453. (NEW) The composition of claim 451, wherein said oligo- or polynucleotide comprises an oligo- or polyribonucleotide. --

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